FLOODPLAIN EVALUATION REPORT

San Diego Freeway (I-405) Improvement Project
SR-73 to I-605

Orange and Los Angeles Counties

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1.0 INTRODUCTION

This Floodplain Evaluation Report was prepared in support of the I-405 Improvement Project as described below. There are several locations along the project with potential floodplain impacts from longitudinal or transverse encroachments by the project. The purpose of this report is to evaluate locations where the project may impact a floodplain and make preliminary recommendations for mitigation and further study.

This report provides data and analysis in support of the EIR/EIS for the proposed project prepared pursuant to California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). It has been prepared in accordance with California Department of Transportation (Caltrans) Standard Environmental Reference for Floodplain Evaluation Reports. The Standard Environmental Reference applies to all transportation projects developed under the auspices of the Department and to all local agency highway or local streets and roads projects with funding or approvals by the Federal Highway Administration. The Department is the CEQA and NEPA lead agency for the project.

In accordance with the "Content and Recommended Format" for technical water quality studies as established in the SER, this report addresses the following:

- Risk Assessment: Includes an overview of the regulatory floodplain within the project area.
- Impacts of the Project: Includes an assessment of direct impacts, impacts to natural floodplain values, support of incompatible floodplain development, and the potential for interruption or termination of the transportation facility in the event of flooding.
- Measures to Minimize Impacts: Recommends minimization measures to decrease potential impacts on regulatory floodplain.

1.1 Project Overview and Location

The Orange County Transportation Authority (OCTA), in cooperation with Caltrans District 12, proposes to improve mainline freeway and interchanges on Interstate 405 (I-405) in Orange County for approximately 14 miles (mi) between State Route (SR) 73, Post Mile (PM) 10.3, and Interstate 605 (I-605), PM 24.1, to reduce congestion and improve lane continuity through the corridor. Three build alternatives and a No Build Alternative are being considered for this project. Alternative 1 proposes to add one general purpose (GP) lane in each direction of I-405 from Euclid Street to I-605. Alternative 2 proposes to add the GP lane included in Alternative 1 and a second GP lane northbound (NB) from Brookhurst Street to the SR-22/7th Street interchange and southbound (SB) from Seal Beach Boulevard to Brookhurst Street. Alternative 3 proposes to add the GP lane included in Alternative 1 and add an additional median lane in each direction from SR-73 to I-605 to operate together with the existing high-occupancy vehicle (HOV) lanes as express lanes. Alternatives 1 and 2 have been carried forward from the Project Study Report/Project Development Support (PSR/PDS), which was prepared for the project initiation phase of the project. Alternative 3 was introduced at the beginning of the Project Approval/Environmental Document (PA/ED) phase as an alternative with future potential public-private partnership and design-build authority. The TSM/TDM Alternative and Build Alternative 4 were considered early in the PA/ED phase but were dropped. Figure 1 shows a project location map.

PROJECT LOCATION MAP

Figure 1

PARSONS

All of the build alternatives would include mainline geometric and interchange ramp improvements as described below:

- Additional auxiliary lanes that link upstream on-ramps with downstream off-ramps
- Standard left and right shoulders for interchange ramps
- Increased ramp storage capacity
- Additional through and turn lanes at ramp intersection with local streets
- Removal of HOV bypass lanes from on-ramps, subject to individual analysis of each on-ramp and approval by Caltrans and the Federal Highway Administration (FHWA)
- A new on-ramp from eastbound (EB) Ellis Avenue to SB I-405
- Reconfiguration of the Brookhurst Street interchange
- Braided ramps in both directions between Magnolia Street and Warner Avenue
- Reconfiguration of the Beach Boulevard interchange
- Reconfiguration of the existing NB off-ramp to EB Westminster Avenue

The proposed improvements would require 8 new structures; 17 overcrossing structure replacements, including 1 pedestrian bridge; and 5 undercrossing structure widening/modifications, including 2 railroad overheads. Several flood control channels would need to be upgraded, including 1 box culvert replacement, 3 box culvert extensions, and 3 new box culverts. Alternative 3 would require one additional structure replacement (Fairview Street Overcrossing), one additional undercrossing structure widening (Harbor Boulevard) and construction of a new direct connector at the I-405/SR-73 interchange.

1.2 Project Description

The proposed improvements are needed to address:

- Inadequate capacity for peak-period traffic demand in GP lanes, as well as HOV lanes
- Operational and geometric deficiencies on the I-405 mainline and interchanges
- Inadequate technology to detect traffic incidents and provide rapid response
- Future traffic forecast, which shows significant increase in travel demand along the I-405 corridor

The purpose of the proposed improvements is to:

- Add capacity and reduce congestion on the GP and HOV lanes
- Enhance interchange operations
- Increase mobility, maximize throughput, improve trip reliability, and optimize operations
- Implement strategies that ensure the earliest project delivery
- Enhance safety

Additional objectives were also established for the project as follows:

- Minimize right-of-way (ROW) acquisition
- Ensure financial viability
- Meet the commitments of the Renewed Measure M to add capacity to I-405
- Maintain or improve future traffic performance within the corridor
- Improve the corridor to ensure that the facility is maintained as an effective link in the National Strategic Highway Network

1.3 Description of Type of Traffic

1.3.1 General Description

I-405 Mainline

With the current configuration, there is insufficient capacity on I-405 to accommodate existing travel demands. Based on 2009 traffic volumes, traffic capacity analysis shows that sections of I-405 currently operate at unacceptable level of service (LOS) during one or both of the peak periods. The existing HOV lanes also experience congestion during the peak hours.

With the anticipated future growth in Orange County, delay is expected to increase on I-405. Under Existing Conditions, traveling the approximately 14 miles of the project corridor requires 15 to 37 minutes during the peak hours, depending upon the direction of travel and time of day. Under Future Without Project conditions, the peak hour travel time in the I-405 corridor is projected to increase to a range of 107 to 163 minutes. Under Existing conditions, average peak hour travel speed on the I-405 corridor ranges from 22 to 54 miles per hour (mph). Under Future Without Project conditions, average peak hour travel speed on the I-405 corridor is

projected to decrease to a range of 5 to 8 mph. Improvements to the I-405 corridor are needed to accommodate projected future traffic.

Truck traffic on I-405 accounts for approximately 3 - 3.5% percent of mainline traffic volume.

Interchange Ramps

Interchange on- and off-ramps along the I-405 corridor also experience unacceptable LOSs during peak periods.

1.3.2 Emergency Access, Supply, and/or Evacuation

I-405 is a conduit for emergency supplies and evacuations. Elevations on the top of the roadway and bridge deck would have sufficient freeboard above the water surface; therefore, they would not be inundated during a 100-year event. Emergency access, evacuations, and the flow of emergency supplies should not be impeded by flood flows.

1.4 Project Alternatives

1.4.1 No Build Alternative

Except as discussed in the subsequent paragraph, the No Build Alternative would maintain the existing configuration of the I-405 corridor with no additional lanes or interchange improvements to be provided. The existing configuration would not accommodate the future traffic demand, and the nonstandard features would not be corrected. Congestion along the corridor would not be alleviated, and the situation would deteriorate with time. This alternative is inconsistent with the Caltrans goal of providing an efficient and effective interregional mobility system. Because there are no improvements anticipated within the project limits, there are no construction or ROW costs associated with this alternative.

The future configuration under the No Build Alterative would assume completion of the West County Connector (WCC) Project, which is currently under construction and anticipated to be completed by 2014. The WCC Project would add two HOV lanes in the median of I-405 between SR-22 and I-605, along with HOV direct connectors at the I-405/SR-22 and I-405/ I-605 interchanges. Nine structures would be constructed as part of the WCC Project including:

- Bolsa Chica Road OC (replace), 55-1102, PM 0.92
- S405-E22 Connector (replace), 55-1101F, PM 20.75
- 22-405 HOV Direct Connector (new), 55-1103E, PM 20.66
- Seal Beach Boulevard OC (replace), 55-1099, PM 22.64
- N405-W22 Connector Separation (replace), 55-1100G, PM 23.27
- 405-605 HOV Direct Connector (new), 55-1098E, PM 24.02
- E22-N405 Connector UC (Lengthen), 55-0415, PM R0.16
- E22-N405/405 Separation Structure (replace), 55-1096G, PM R0.39
- E22-N605/405 Separation (replace), 55-1097G, PM R0.39

1.4.2 Build Alternative 1: Add One General Purpose Lane in Each Direction

Alternative 1 proposes to add one GP lane in each direction of I-405 from Euclid Street to I-605.

Proposed Engineering Features

Proposed engineering features in Alternative 1 are summarized as follows:

- Mainline features include:
  - Addition of one GP lane in each direction.
  - New auxiliary lane on NB I-405 at the approach of the Euclid Street off-ramp.
  - New auxiliary lane on NB I-405 between Seal Beach Boulevard on-ramp and SR-22/ 7th Street off-ramp.
  - New auxiliary lane on SB I-405 between Euclid Street on-ramp to Harbor Boulevard off-ramp.
  - Removal of the SB auxiliary lane between Beach Boulevard on-ramp and Magnolia Street off-ramp.
- Interchange features include:
  - Reconstruction of most existing interchange ramps from Euclid Street to Seal Beach Boulevard.
  - Additional through and turn lanes at ramp intersections with local streets.
  - Removal of HOV bypass lanes from on-ramps.

- A new on-ramp from EB Ellis Avenue to SB I-405.
- Reconfiguration of the Brookhurst Street interchange.
- New braided ramps on both directions of I-405 between Warner Avenue and Magnolia Street.
- Reconfiguration of the Beach Boulevard interchange.

- Structural features include:
  - 6 new structures, 17 structure replacements, and 5 structure widenings/modifications.
  - 1 box culvert replacement, 3 box culvert extensions, and 3 new box culverts.
  - Construction of retaining walls where needed.
  - Reconstruction of existing soundwalls that would be impacted by the project construction.
  - Construction of new soundwalls.

1.4.3 Build Alternative 2: Add Two General Purpose Lanes in Each Direction

Alternative 2 proposes to add one GP lane on both directions of I-405 from Euclid Street to I-605 and a second GP lane NB from Brookhurst Street to the SR-22/7th Street interchange and SB from Seal Beach Boulevard to Brookhurst Street.

Proposed Engineering Features

Proposed engineering features in Alternative 2 are summarized as follows:

- Mainline features include:
  - Addition of two GP lanes in each direction.
  - New auxiliary lane on NB I-405 at the northerly approach of the Euclid Street off-ramp.
  - New auxiliary lane on NB I-405 between Euclid Street on-ramp and Brookhurst Street off-ramp.
  - New auxiliary lane on SB I-405 between Euclid Street on-ramp to Harbor Boulevard off-ramp.
  - Removal of the SB auxiliary lane between Beach Boulevard on-ramp and Magnolia Street off-ramp.
- Interchange features include:
  - Reconstruction of most existing interchange ramps from Euclid Street to Seal Beach

Boulevard.

- Additional through and turn lanes at ramp intersections with local streets.
- Removal of HOV bypass lanes from on-ramps.
- A new on-ramp from EB Ellis Avenue to SB I-405.
- Reconfiguration of the Brookhurst Street interchange.
- New braided ramps on both directions of I-405 between Warner Avenue and Magnolia Street.
- Reconfiguration of the Beach Boulevard interchange.

- Structural features include:
  - 6 new structures, 17 structure replacements, and 5 structure widenings/modifications.
  - 1 box culvert replacement, 3 box culvert extensions, and 3 new box culverts.
  - Construction of retaining walls where needed.
  - Reconstruction of existing soundwalls that would be impacted by the project construction.
  - Construction of new soundwalls.

1.4.4 Build Alternative 3: Add One General Purpose Lane Plus Express Lane in Each Direction

Alternative 3 is the only alternative being considered with a toll component that may utilize future potential public-private partnership and design-build authority to construct. Alternative 3 would add one GP lane in each direction along I-405 from Euclid Street to I-605 and would provide an Express Facility with 4 lanes (2 in each direction) for approximately 15 miles on I-405 from SR-73 to I-605. The Express Facility would include the existing HOV lanes (1 lane in each direction from SR-73 to SR-22 East and 2 lanes in each direction between SR-22 East and I-605), as well as a new lane in each direction from SR-73 to SR-22 East.

Proposed Engineering Features

Proposed engineering features in Alternative 3 are summarized as follows:

- Mainline features include:
  - Addition of one GP lane in each direction.
  - Provision of tolled express lanes combined with HOV usage.

- New auxiliary lane on NB I-405 at the northerly approach of the Euclid Street off-ramp.
- New auxiliary lane on NB I-405 between Seal Beach Boulevard on-ramp and SR-22/7th Street off-ramp.
- New auxiliary lane on SB I-405 between Euclid Street on-ramp to Harbor Boulevard off-ramp.
- Removal of the SB auxiliary lane between Beach Boulevard on-ramp and Magnolia Street off-ramp.

- Interchange features include:
  - Reconstruction of most existing interchange ramps from Fairview Road to Seal Beach Boulevard.
  - Additional through and turn lanes at ramp intersections with local streets.
  - Removal of HOV bypass lanes from on-ramps.
  - Partial reconstruction of the NB branch connector and the I-405/Fairview Road collector-distributor system.
  - A new on-ramp from EB Ellis Avenue to SB I-405.
  - Reconfiguration of the Brookhurst Street interchange.
  - New braided ramps on both directions of I-405 between Warner Avenue and Magnolia Street.
  - Reconfiguration of the Beach Boulevard interchange.
- Structural features include:
  - 7 new structures, 18 structure replacements, and 6 structure widenings/modifications.
  - A new direct connector in the median between I-405 and SR-73.
  - 1 box culvert replacement, 3 box culvert extensions, and 3 new box culverts.
  - Construction of retaining walls where needed.
  - Reconstruction of existing soundwalls that would be impacted by the project construction.
  - Construction of new soundwalls.

1.4.5 PA/ED TSM/TDM Alternative (Eliminated)

The Transportation System Management (TSM)/Transportation Demand Management (TDM)

Alternative consists primarily of operational investments, policies, and actions aimed at improving traffic flow, promoting travel safety, and increasing transit usage and rideshare participation. TSM focuses on improvements that increase transportation system performance including minor geometric improvements, signal synchronization, improved information gathering and dissemination by using Closed Circuit Television System with Pan-Tilt-Zoom capability, bus signal priority implementation, freeway ramp metering upgrade, and upgrade and linkage between Caltrans and cities' Traffic Management Centers. TDM focuses on programs that reduce system demand including promoting rideshare programs; facilitating carpool, vanpool and intermodal transfers; implementing transit signal priority (TSP) system; and improving park-and-ride facilities/intermodal facilities.

TSM elements that may be incorporated into the build alternatives include:

- Add 15 new Closed Circuit Television (CCTV) with Pan-Tilt-Zoom (PTZ) capability along I-405.
- Upgrade ramp metering systems.
- Add 24 Vehicle Detection System (VDS) loop locations along I-405.
- Apply smart street treatments on Harbor Boulevard, Brookhurst Street, Warner Avenue, Edinger Avenue, Beach Boulevard, Westminster Boulevard, and Bolsa Chica Road.
- Synchronize traffic signals.
- Signalize existing stop-controlled intersections.
- Upgrade signal equipment, coordination, and communication.
- Upgrade Traffic Management Center (TMC) to allow direct control of traffic signals.
- Replace antiquated controllers.
- Add Changeable Message Signs (CMS) on SB I-405 at Springdale Street and on SB I-405 at Newland Street.
- Upgrade existing traffic monitoring stations along I-405.
- Complete fiber optic network along the corridor.
- Link traffic signals within the study area to Caltrans TMC and implement adaptive signal control.

- Link TMCs between Caltrans and cities using new technology with fiber optic system network.
- Allow Caltrans to operate local TMCs after hours when agency TMCs are not staffed.
- Incorporate VDS on arterials with smart street treatments and/or signal synchronization.
- Incorporate real-time adaptive ramp metering control system at freeway interchanges.
- Improve way-finding signs, information kiosks, and safety and lighting in park-and-ride facilities.
- Integrate park-and-ride/intermodal facilities with the OCTA's Bus. Rapid Transit (BRT), express buses, Go Local Metrolink Connectors, community circulators, and local buses.
- Add an intermodal facility with park-and-ride lot at the northwest corner of Westminster Boulevard and Edwards Street.
- Add a BRT Transfer station at the northeast corner of Beach Boulevard and Edinger Avenue.
- Incorporate Transit Signal Priority (TSP) at ramp terminal intersections along Beach Boulevard, Harbor Boulevard, Westminster Boulevard, and Edinger Avenue to support OCTA corridor TSP on facilities with BRT.

The TSM/TDM was dropped from further consideration by OCTA and Caltrans due to its inability to satisfy the purpose and need of the project. The TSM/TDM would partially improve interchange operations, accelerate project delivery and enhance safety. However, it would not add capacity and reduce congestion nor increase mobility along the I-405 corridor. In addition, this alternative does not satisfy the commitment of the Renewed Measure M program which promised the Orange County voters added capacity on I-405. Furthermore, the improvements proposed in this alternative do not meet the project description in the SCAG's RTP.

1.4.6 PA/ED Build Alternative 4 (Eliminated)

Build Alternative 4 was proposed as lower cost option to provide localized improvements within

the I-405 corridor that could be fully funded and implemented with available revenue from the Orange County Renewed Measure M transportation sales tax initiative. This alternative includes construction of one GP lane in each direction on I-405 from Euclid Street to Magnolia Street along with interchange, local street and structure improvements for features located within the limits of the freeway widening.

Build Alternative 4 was dropped from further consideration by OCTA and Caltrans due to its inability to satisfy the purpose and need of the project, identified in Section 4 of this document. This alternative would partially improve interchange operations, accelerate project delivery and enhance safety. However, it would not add capacity and reduce congestion nor increase mobility along the entire I-405 corridor. In addition, this alternative does not satisfy the commitment of the Renewed Measure M program which promised the Orange County voters added capacity on I-405 from SR-73 to I-605. Furthermore, the improvements proposed in this alternative do not meet the project description in the SCAG's RTP.

1.5 Floodplain Description

Floodplain and Floodway

Floodplains are areas of land inundated by the river during the 100-year flood. Floodplains are a natural feature of rivers that may also occur in portions of a watershed on land depressions or wetlands. They are the mostly flat land adjacent to the river and are formed due to the actions of a river. Designated Floodway refers to the channel of the stream and that portion of the adjoining floodplain reasonably required to provide for the passage of a design flood. Developments are prohibited in the floodway. Figure 2 depicts both floodplain and floodway areas.

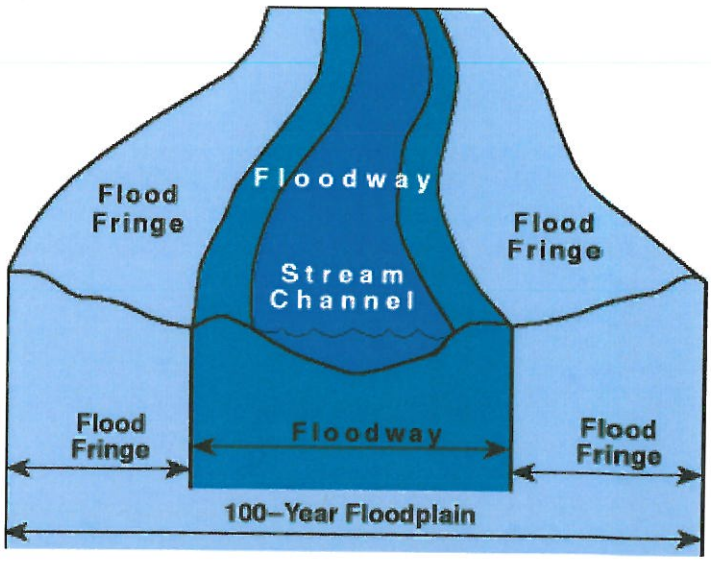

Figure 2 – Typical Floodplain and Floodway Location with Respect to the Main Stream

Rivers erode their own banks and redeposit the eroded material downstream. Material is added to the floodplain during floods, a process called overbank deposition. Rivers are constantly trying to reach an equilibrium state where there is balance of water and soil material. The material that underlies floodplains is a mixture of thick layers of sand and thin layers of mud. Undisturbed floodplains provide natural buffer by: (a) reducing the number and severity of floods, (b) minimizing non-point source water pollution, (c) filtering stormwater, (d) providing habitat for plants and animals, and (e) creating aesthetic beauty and outdoor recreation benefits.

When the flow in the river overtops its banks, the overflow spreads over the floodplain, which slows the flow of the water. Reduced water velocity can help prevent severe erosion and flooding downstream. In addition, during high water events, some of the water is absorbed by the floodplain, reducing the extent of the flooding. The absorbed water can then be returned to the stream during times of low water.

Floodplains are also home to many types of plants and animals and may also have forests and wetlands on or adjacent to them. These river edges provide habitat for insects, birds, reptiles, amphibians, and mammals. The vegetation also helps filter contaminants out of the water flowing into the river. In addition, vegetated floodplains provide shade for the adjacent rivers

and streams, increasing dissolved oxygen levels and consequently improving habitat for aquatic plants and animals.

In general, a floodplain cannot be altered in any way until it has been shown that alteration will pass the base flood without significant damage to either the floodplain or surrounding areas. No bridge abutment or embankment shall encroach on a regulatory floodway.

FEMA Designations

The Federal Emergency Management Agency (FEMA) designates Special Flood Hazard Areas (SFHAs) according to Zones. The Base Flood Elevation (BFE) is the water-surface elevation of the 1 percent annual chance of flood. The zones are described as:

Zone A – Corresponds to the 100-year floodplains that are determined in the Flood Insurance Study (FIS) by approximate methods. No BFEs or depths have been determined.

Zone AE – Corresponds to the areas of 100-year floodplains that are determined in the FIS by detailed methods. In most instances, BFEs have been derived from detailed hydraulic analyses and are shown within this zone.

Zone AH – Corresponds to the areas of 100-year shallow flooding with a constant water-surface elevation. Flood depths are 1 to 3 feet (usually areas of ponding); BFEs are derived from detailed hydraulic analyses and are shown at selected intervals within this zone.

Zone AO – Corresponds to the areas of 100-year shallow flooding. Flood depths are 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities are also determined.

Zone AR – Depicts areas protected from flood hazards by flood control structures such as levees that are being restored.

Zone X (dotted) – Other flood areas. Areas of 0.2 percent annual chance flood; areas of 1 percent annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1 percent annual chance flood.

Zone X – Areas determined to be outside the 0.2 percent annual chance floodplain.

Flood hazard areas within the study corridor are shown in Appendix A, Location Hydraulic Study.

1.6 Federal Regulations

National Flood Insurance Program

FEMA developed the National Flood Insurance Program (NFIP) to assist thousands of communities across the country with floodplain management. NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in these participating communities. In addition to providing flood insurance and reducing flood damage through floodplain management regulations, the NFIP identifies and maps the nation's floodplains. Mapping flood hazards creates broad-based awareness of the flood hazards and provides the data needed for floodplain management programs and to actuarially rate new construction for flood insurance.

Executive Order (EO) 11988 directs all federal agencies to avoid to the extent practicable and feasible all short-term and long-term adverse impacts associated with floodplain modification and to avoid direct and indirect support of development within 100-year floodplains whenever there is a reasonable alternative available. Projects that encroach upon 100-year floodplains must be supported with additional specific information. The U.S. Department of Transportation Order 5650.2, Floodplain Management and Protection, prescribes "policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs, and budget requests." The order does not apply to areas with Zone C (areas of minimal flooding as shown on FEMA Flood Insurance Rate Maps [FIRM]).

U.S. Environmental Protection Agency

Under the Clean Water Act (CWA), the United States Environmental Protection Agency (EPA) was granted authority to implement pollution control programs, such as setting wastewater standards for industry. The CWA established the basic structure for regulating discharges of pollutants into the waters of the United States; in addition, it contains requirements to set water quality standards for all contaminants in surface waters. The CWA created the National

Pollutant Discharge Elimination System (NPDES) permit program to regulate the discharge of any pollutant from a point source into navigable waters by requiring those point sources to obtain a permit if their discharges go directly to surface waters.

Federal Emergency Management Agency

A Floodplain Evaluation is required as described under the NFIP (23 *Code of Federal Regulations* [CFR] 650, Subpart A Section 650). Section 650.111 of the regulations calls for location hydraulic studies to be performed with detailed engineering design drawings. Hydraulic modeling will be required, along with a hydraulic report summarizing the results (to be submitted for review by the local agencies listed in the FIRMs). A Conditional Letter of Map Revision (CLOMR) and a Letter of Map Revision (LOMR) may be required by FEMA for work within a floodway or for work resulting in significant impacts to the 100-year floodplain.

Clean Water Act (33 U.S.C. § 1251 *et seq.*)

The purpose of the CWA is restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters through prevention and elimination of pollution. The CWA applies to discharges of pollutants into waters of the United States. California's State Water Resources Control Board (SWRCB) is the State agency with primary responsibility for implementation of State and federally established regulations relating to hydrology and water quality issues. Typically, all regulatory requirements are implemented by the SWRCB through the nine different Regional Water Quality Control Boards (RWQCBs) established throughout the state. The CWA operates on the principle that any discharge of pollutants into the nation's waters is prohibited unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool.

1.7 Required Permits and Approvals

The following permits may be required for water bodies impacted by the project.

Section 404 Permits

CWA Section 404 establishes a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands. Responsibility for administering and enforcing Section 404 is shared by the U.S. Army Corps of Engineers (USACE) and EPA.

USACE administers the day-to-day program, including individual permit decisions and jurisdictional determinations; develops policy and guidance; and enforces Section 404 provisions.

Section 401 Certification: Certification by the RWQCB to USACE and U.S. Fish and Wildlife Service

Certifies that Section 404 mitigation plan conforms to applicable Section 401 water quality standards from Santa Ana River RWQCB under Region #8 Federal CWA (Section 401).

NPDES Permit

Documents that completed project meets applicable water quality standards for drainage and runoff. An NPDES permit and Storm Water Pollution Prevention Plan (SWPPP)) are required from SWRCB under the Federal CWA (Section 402).

NPDES Permitting Requirements for Dewatering Discharges (Permit R8-2006-0004)

Discharges consisting solely of stormwater or minor discharges of non-stormwater containing sediment as the only pollutant are allowed to be discharged under the NPDES Statewide Permit. Examples of the latter are groundwater, water from cofferdams, and water diversions. The definition of a minor discharge in Region 8 is less than 0.25 million gallons per day (mgd) and 4 months' duration. A major discharge of non-stormwater, or stormwater or non-stormwater discharges containing pollutants other than sediment, require a site-specific dewatering permit from the RWQCB. (RWQCB, Region #8 Federal CWA [Section 402])

"Section 1602" Streambed Alteration Agreement; "Section 2080"

Agreement for threatened and endangered species from California Department of Fish and Game California Public Resources Code.

2.0 ALTERNATIVES TO FLOODPLAIN ENCROACHMENT

The *I-405 Major Investment Study Report (February 2006) (MIS)* documented potential improvements to address the major transportation problems in the corridor and presented analysis of the final alternatives considered for corridor improvements. Thirteen conceptual alternatives were identified for the corridor. Four build alternatives, a Transportation System Management (TSM) alternative and a no-build alternative were recommended for further analysis. All build alternatives would encroach on floodplain areas adjacent to the freeway in varying degrees.

The Project Study Report (July 2008) (PSR) studied two build alternatives with TSM features. Build Alternative 1 would add a single general purpose freeway lane in each direction of I-405 from Euclid Street to the I-605 interchange. Build Alternative 2 would add the general purpose lane included in Alternative 1 and a second general purpose lane northbound from Brookhurst Street to the State Route 22 (SR-22)/7th Street interchange and southbound from Seal Beach Boulevard to Brookhurst Street. Both alternatives would encroach on floodplain areas adjacent to the freeway.

As an alternative to encroachment, a Transportation System Management/Transportation Demand Management (TSM/TDM) was considered but was dropped early in the PA/ED phase. The "No-Build" Alternative is still being considered and is discussed below.

2.1 TSM/TDM Alternative

Transportation System Management (TSM) is the practice of improving the transportation system's capabilities by making changes in how the system is managed. Examples of such improvements include signal timing upgrades, freeway service patrols, variable message boards, ride match services for carpooling, road condition reports, pavement restriping, and other techniques. By its nature TSM does not include major increases in roadway or fixed guideway transit, such as new roadway lanes or additional rail track. However, it does include more minor physical improvements such as additional turning lanes at intersections, auxiliary lanes, and other similar lower cost improvements. The TSM/TDM Alternative was removed

from further consideration because the TSM/TDM measures alone could not satisfy the project's stated purpose and need. However, various TSM/TDM features would be considered during the PA/ED phase of the project to be included in the proposed build Alternatives 1, 2, and 3, where appropriate.

2.2 No-Build Alternative

Under the "No-Build" scenario, the I-405 Improvement would not be constructed. Floodplain encroachment is not necessary but traffic would continue to operate at poor level of service. The existing configuration would not accommodate the future traffic demand and the nonstandard features would not be corrected.

3.0 RISK ASSESSMENT

The I-405 project will impact several water bodies and their floodplain at varying degrees, depending on the alternative. The 100-year floodplain maps as developed by FEMA can be found in Appendix A, Location Hydraulic Study. Review of NFIP, field investigation, topographic mapping, and tributary drainage indicates that the proposed freeway widening would have very small to no significant risks to life and properties. The following table lists potential floodplain encroachments. The detailed assessment can be found in the Location Hydraulic Study (Parsons, November 2010) in Appendix A.

TABLE 1 – SUMMARY ENCROACHMENT

Channel Name	Q_{100} year (cfs)	Type of Encroach-ment	Effects on Natural Beneficial Values	Effects on Incompatible Development	High Risk		
					Alt. 1	Alt. 2	Alt. 3
Gisler Storm Channel*	Unknown+	Transverse	None	None	N/A[1]	N/A[1]	No
Greenville-Banning Channel (D03)	3,450	Transverse	None	None	N/A[1]	N/A[1]	No
Santa Ana River	47,000	Transverse	None	None	Moderate		
Fountain Valley Channel (D06)	172	Transverse	None	None	No	No	No
Ocean View Channel (C06)	1,930	Transverse	None	None	No	No	No
East Garden Grove-Wintersburg Channel (C05)	5,910	Transverse	None	None	No	No	No

Channel Name	Q_{100} year (cfs)	Type of Encroach-ment	Effects on Natural Beneficial Values	Effects on Incompatible Development	High Risk		
					Alt. 1	Alt. 2	Alt. 3
Newland Storm Channel	1,080	Transverse	None	None	No	No	No
Edinger Storm Channel* (C05S05)	Unknown+	Longitudinal	None	None	No	No	No
Westminster Channel* (C04)	4,190	Transverse	None	None	No	No	No
Bixby Storm Channel*	203	Longitudinal	None	None	No	No	No
Montecito Storm Channel	410	Transverse	None	None	No	No	No

1 N/A - No floodplain impacts associated with alternative

+ No Data found.

The most significant encroachment occurs in the Santa Ana River where the existing I-405 bridge pier walls will be extended and a new Euclid St. southbound on-ramp bridge is proposed over the river. According to the I-405/Santa Ana Bridge Hydraulics Report (Parsons, November 2010), Alternative 3 would raise the 100-year water surface by a maximum 2.34 feet between the I-405 and Euclid St. on-ramp bridge. The hydraulic study indicates that there is still sufficient freeboard and channel capacity. The water surface elevation returns to existing levels shortly downstream of the proposed Euclid St. on-ramp bridge.

4.0 IMPACTS TO FLOODPLAIN

Alternatives 1, 2, and 3 would encroach on several floodplains. Specifics regarding floodplain encroachment are as follows:

4.1 Natural and Beneficial Floodplain Values

According to the Santa Ana RWQCB's Basin Plan, the Santa Ana River (SAR) is the only flood control facility that has natural and beneficial floodplain values.

The SAR outlets to the Pacific Ocean between Newport Beach and Huntington Beach. The Santa Ana RWQCB designates beneficial uses for waters in the SAR Watershed, which are identified in the Basin Plan (RWQCB 1995). The beneficial uses that have been identified for Reaches 1 and 2 of the SAR are as follows:

- Municipal and Domestic Supply – Waters are used for community, military, municipal, or individual water supply systems. These uses may include, but are not limited to, drinking water supply.
- Wildlife Habitat – Uses of water that supports terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
- Warm Freshwater Habitat – Maintenance of warm water ecosystems.
- Body Contact Recreation – Recreational activities involving body contact with water.
- Non-Body Contact Recreation – Recreational activities involving proximity to water, but generally no body contact or ingestion of water.

The SAR has moderate wildlife habitat values. The bridges constructed across the SAR would not substantially alter the habitat and impede the use of the floodplain as a movement corridor for wildlife.

4.2 Probable Incompatible Floodplain Development

It is determined that floodplain encroachments would not adversely affect the BFEs.

Every effort will be made so that the project remains compatible with the NFIP of FEMA.

4.3 Potential for Interruption or Termination of a Transportation Facility in the Event of Flooding.

The entire road surface would be above the 100-year floodplain. The project would not substantially alter water surface elevations of the 100-year flood, and therefore would not affect the potential for interruption or termination of a transportation facility in the event of flooding.

5.0 MEASURES TO MINIMIZE IMPACTS

The following measures will be incorporated into the design and construction phases to minimize potential floodplain impact:

- Project design elements would include incorporation of bridge piers paralleling the direction of flow to minimize flow obstruction;
- Bridges would be designed with sufficient freeboard above the 100-year water surface elevation to prevent the bridge deck from impacting flood flows;
- Provide positive drainage during construction and refrain from diverting flows;
- Employ recommended Best Management Practices (BMPs);
- In-river construction and post construction shall include erosion control and water quality protection;
- A contingency plan shall be developed for unforeseen discovery of underground contaminants;
- Construction activities between October and May shall be limited to those actions that can adequately withstand high flows and entrainment of construction materials;
- Adequate conveyance capacity will be provided at bridge crossings to ensure no net increase in velocity.

6.0 FUTURE CONSIDERATION

Per FHWA Sec 650.115 Design Standards Guidelines, design of highways:

1. The design selected for an encroachment shall be supported by analyses of design alternatives with consideration give to capital cost and risk, risk analysis or assessment

2. The design flood for encroachments by through lanes of Interstate highways shall not be less than the flow with a 2 percent chance of being exceeded in any given year. No minimum design flood is specified for Interstate highway ramps and frontage roads or for other highways

3. Freeboard shall be provided, where practicable, to protect bridge structures from debris- and scour-related failure.

7.0 EVALUATION CRITERIA

A summary of the evaluation criteria is provided in Table 1. This table indicates that the I-405 Improvement Project would have no material effect on natural and beneficial floodplain values or incompatible floodplain development, and it would not create a high-risk condition.

This floodplain evaluation has considered the effects of the build alternatives in terms of encroachment, interruption, and risk and concluded that significant encroachment does not exist.

8.0 REFERENCES

1. Flood Insurance Rate Maps, Various, by the Federal Emergency Management Agency
2. Traffic Impact Study for I-405 Freeway Improvement Project, Albert Grover & Associates, December 2010
3. I-405 Improvement Location Hydraulic Study, Parsons, December 2010
4. Interstate 405 Major Investment Study, Parsons, February 2006
5. I-405/Santa Ana River Bridge Hydraulics Report, Parsons, November 2010
6. Montecito Channel Hydrology Report No C01-3.
7. Bixby Channel Hydrology Report No C01-S04.
8. Hydrology Report for Los Alamitos Channel.
9. Hydrology Report No. C02-4A, Bolsa Chica Channel (C02) San Diego Freeway to Cerritos Avenue, dated January 1997, by Orange County Public Facilities and Resources Department.
10. Hydrology Report No. C03-4, Anaheim-Barber City Channel Facility No. C03 Entire Drainage System, dated September 1986, by Orange County Resources and Development Management Department.
11. Hydrology Report No.C04-4, Westminster Channel (Facility No. c04) Entire Drainage System Hydrology, dated December 2002, by Orange County Public Facilities and Resources Department.
12. Hydrology Report – Newland Storm Channel Facility No. C05S01, dated August 2005, by Orange County Resources and Development Management Department.
13. Hydrology Report for East Garden Grove-Wintersburg Channel (Facility No. C05) Bolsa Chica Bay to Vermont Avenue, dated July 1990, by Environmental Management Agency.

14. Hydrology Report No. C06-2, Ocean View Channel, Facility No, C06, Entire Drainage System, dated November 1989, by Environmental Management Agency.

15. The 100-year discharge is 47,000 cfs per "US Army Corps of Engineers, Design Flood Peak Dischargers, SAR, Future Conditions, "Santa Ana River Mainstem Phase II General Design."

16. Hydrology Report No. D03-4, Greenville-Banning Channel (Facility No. D03), dated June 1999, by Orange County Environmental Management Agency.

APPENDIX A

LOCATION HYDRAULIC STUDY

LOCATION HYDRAULIC STUDY

San Diego Freeway (I-405) Improvement Project
SR-73 to I-605

Orange and Los Angeles Counties

12-ORA-405 PM 9.3/24.2 / 07-LA-405 PM 0.0/1.2
12-ORA-22 PM R0.7/R3.8 / 12-ORA-22 PM R0.5/R0.7
12-ORA-73 PM R27.2/R27.8 / 12-ORA-605 PM 3.5/R1.6
07-LA-605 PM R0.0/R1.2

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December **201**0

Caltrans

STATE OF CALIFORNIA
Department of Transportation

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1.0 INTRODUCTION

This Location Hydraulic Study was prepared in support of the I-405 Improvement Project as described below. There are several locations along the project with potential floodplain impacts from longitudinal or transverse encroachments by the project. The purpose of this report is to evaluate locations where the project may impact a floodplain and make preliminary recommendations for mitigation and further study.

1.1 Project Overview and Location

The Orange County Transportation Authority (OCTA), in cooperation with the California Department of Transportation (Caltrans), proposes to improve mainline freeway and interchanges on Interstate 405 (I-405) in Orange County for approximately 14 miles (mi) between State Route (SR) 73, Post Mile (PM) 10.3, and Interstate 605 (I-605), PM 24.1, to reduce congestion and improve lane continuity through the corridor. Three build alternatives and a No Build Alternative are being considered for this project. Alternative 1 proposes to add one general purpose (GP) lane in each direction of I-405 from Euclid Street to I-605. Alternative 2 proposes to add the GP lane included in Alternative 1 and a second GP lane northbound (NB) from Brookhurst Street to the SR-22/7th Street interchange and southbound (SB) from Seal Beach Boulevard to Brookhurst Street. Alternative 3 proposes to add the GP lane included in Alternative 1 and add an additional median lane in each direction from SR-73 to I-605 to operate together with the existing high-occupancy vehicle (HOV) lanes as express lanes. Alternatives 1 and 2 have been carried forward from the Project Study Report/Project Development Support (PSR/PDS), which was prepared for the project initiation phase of the project. Alternative 3 was introduced at the beginning of the Project Approval/Environmental Document (PA/ED) phase as an alternative with future potential public-private partnership and design-build authority. Figure 1 shows a project location map.

PROJECT LOCATION MAP

Figure 1

PARSONS

All of the build alternatives would include mainline geometric and interchange ramp improvements as described below:

- Additional auxiliary lanes that link upstream on-ramps with downstream off-ramps
- Standard left and right shoulders for interchange ramps
- Increased ramp storage capacity
- Additional through and turn lanes at ramp intersection with local streets
- Removal of HOV bypass lanes from on-ramps, subject to individual analysis of each on-ramp and approval by Caltrans and the Federal Highway Administration (FHWA)
- A new on-ramp from eastbound (EB) Ellis Avenue to SB I-405
- Reconfiguration of the Brookhurst Street interchange
- Braided ramps in both directions between Magnolia Street and Warner Avenue
- Reconfiguration of the Beach Boulevard interchange
- Reconfiguration of the existing NB off-ramp to EB Westminster Avenue.

The proposed improvements would require 8 new structures; 17 overcrossing structure replacements, including 1 pedestrian bridge; and 5 undercrossing structure widening/modifications, including 2 railroad overheads. Several flood control channels would need to be upgraded, including 1 box culvert replacement, 3 box culvert extensions, and 3 new box culverts. Alternative 3 would require one additional structure replacement (Fairview Street Overcrossing), one additional undercrossing structure widening (Harbor Boulevard) and construction of a new direct connector at the I-405/SR-73 interchange.

1.2 Setting

1.2.1 Land Uses

The I-405 Improvement Project proposes to widen the freeway through a heavily urbanized area. The urban area consists mainly of residential and commercial developments.

1.2.2 Climate

The climate of the project area is classified as Mediterranean, which is characterized by warm, dry summers and mild, wet winters. Coastal areas have a moderate climate with frequent fog in the summer. Most of the precipitation comes as rain during the winter months. The major

contributions to the climate are the Eastern Pacific High and the Mediterranean effects of the Pacific Ocean. The mean high winter temperature is 65 degrees Fahrenheit (°F), and the mean high summer temperature is 77 °F. Orange County experiences 328 days of sunshine per year and an average daytime temperature of 73 °F.

1.2.3 Flood Control Structures

There are several flood control structures along the project corridor. Channels flow along residential and commercial developments, parks, and golf courses. Flood control levees exist for the Santa Ana River (SAR), Fountain Valley Channel, and East Garden Grove Wintersburg Channel to protect the surrounding area from flooding.

Most, if not all, flood control channels are engineered channels. Improvements have been made over the years, and the Orange County Flood Control District (OCFCD) plans to improve several structures to provide additional flood protection.

1.3 Project Description

The proposed improvements are needed to address:

- Inadequate capacity for peak-period traffic demand in GP lanes, as well as HOV lanes
- Operational and geometric deficiencies on the I-405 mainline and interchanges
- Inadequate technology to detect traffic incidents and provide rapid response
- Future traffic forecast, which shows significant increase in travel demand along the I-405 corridor

The purpose of the proposed improvements is to:

- Add capacity and reduce congestion on the GP and HOV lanes
- Enhance interchange operations
- Increase mobility, maximize throughput, improve trip reliability, and optimize operations
- Implement strategies that ensure the earliest project delivery
- Enhance safety

Additional objectives were also established for the project as follows:

- Minimize right-of-way (ROW) acquisition
- Ensure financial viability
- Meet the commitments of the Renewed Measure M to add capacity to I-405
- Maintain or improve future traffic performance within the corridor
- Improve the corridor to ensure that the facility is maintained as an effective link in the National Strategic Highway Network

1.4 Description of Type of Traffic

1.4.1 General Description

I-405 Mainline

With the current configuration, there is insufficient capacity on I-405 to accommodate existing travel demands. Based on 2009 traffic volumes, traffic capacity analysis shows that sections of I-405 currently operate at unacceptable level of service (LOS) during one or both of the peak periods. The existing HOV lanes also experience congestion during the peak hours.

With the anticipated future growth in Orange County, delay is expected to increase on I-405. Under Existing Conditions, traveling the approximately 14 miles of the project corridor requires 15 to 37 minutes during the peak hours, depending upon the direction of travel and time of day. Under Future Without Project conditions, the peak hour travel time in the I-405 corridor is projected to increase to a range of 107 to 163 minutes. Under Existing conditions, average peak hour travel speed on the I-405 corridor ranges from 22 to 54 miles per hour (mph). Under Future Without Project conditions, average peak hour travel speed on the I-405 corridor is projected to decrease to a range of 5 to 8 mph. Improvements to the I-405 corridor are needed to accommodate projected future traffic.

Truck traffic on I-405 accounts for approximately 3 - 3.5 percent of mainline traffic volume.

Interchange Ramps

Interchange on- and off-ramps along the I-405 corridor also experience unacceptable LOSs during peak periods.

1.4.2 Emergency Access, Supply, and/or Evacuation

I-405 is a conduit for emergency supplies and evacuations. Elevations on the top of the roadway and bridge deck would have sufficient freeboard above the water surface; therefore, they would not be inundated during a 100-year event. Emergency access, evacuations, and the flow of emergency supplies should not be impeded by flood flows.

1.5 Project Alternatives

1.5.1 No Build Alternative

Except as discussed in the subsequent paragraph, the No Build Alternative would maintain the existing configuration of the I-405 corridor with no additional lanes or interchange improvements to be provided. The existing configuration would not accommodate the future traffic demand, and the nonstandard features would not be corrected. Congestion along the corridor would not be alleviated, and the situation would deteriorate with time. This alternative is inconsistent with the Caltrans goal of providing an efficient and effective interregional mobility system. Because there are no improvements anticipated within the project limits, there are no construction or ROW costs associated with this alternative.

The future configuration under the No Build Alternative would assume completion of the West County Connector (WCC) Project, which is currently under construction and anticipated to be completed by 2014. The WCC Project would add two HOV lanes in the median of I-405 between SR-22 and I-605, along with HOV direct connectors at the I-405/SR-22 and I-405/ I-605 interchanges. Nine structures would be constructed as part of the WCC Project including:

- Bolsa Chica Road OC (replace), 55-1102, PM 0.92
- S405-E22 Connector (replace), 55-1101F, PM 20.75
- 22-405 HOV Direct Connector (new), 55-1103E, PM 20.66
- Seal Beach Boulevard OC (replace), 55-1099, PM 22.64
- N405-W22 Connector Separation (replace), 55-1100G, PM 23.27
- 405-605 HOV Direct Connector (new), 55-1098E, PM 24.02
- E22-N405 Connector UC (Lengthen), 55-0415, PM R0.16
- E22-N405/405 Separation Structure (replace), 55-1096G, PM R0.39

- E22-N605/405 Separation (replace), 55-1097G, PM R0.39

1.5.2 Build Alternative 1: Add One General Purpose Lane in Each Direction

Alternative 1 proposes to add one GP lane in each direction of I-405 from Euclid Street to I-605.

Proposed Engineering Features

Proposed engineering features in Alternative 1 are summarized as follows:

- Mainline features include:
  - Addition of one GP lane in each direction.
  - New auxiliary lane on NB I-405 at the approach of the Euclid Street off-ramp.
  - New auxiliary lane on NB I-405 between Seal Beach Boulevard on-ramp and SR-22/ 7th Street off-ramp.
  - New auxiliary lane on SB I-405 between Euclid Street on-ramp to Harbor Boulevard off-ramp.
  - Removal of the SB auxiliary lane between Beach Boulevard on-ramp and Magnolia Street off-ramp.
- Interchange features include:
  - Reconstruction of most existing interchange ramps from Euclid Street to Seal Beach Boulevard.
  - Additional through and turn lanes at ramp intersections with local streets.
  - Removal of HOV bypass lanes from on-ramps.
  - A new on-ramp from EB Ellis Avenue to SB I-405.
  - Reconfiguration of the Brookhurst Street interchange.
  - New braided ramps on both directions of I-405 between Warner Avenue and Magnolia Street.
  - Reconfiguration of the Beach Boulevard interchange.
- Structural features include:
  - 6 new structures, 17 structure replacements, and 5 structure widenings/modifications.
  - 1 box culvert replacement, 3 box culvert extensions, and 3 new box culverts.
  - Construction of retaining walls where needed.

- Reconstruction of existing soundwalls that would be impacted by the project construction.
- Construction of new soundwalls.

1.5.3 Build Alternative 2: Add Two General Purpose Lanes in Each Direction

Alternative 2 proposes to add one GP lane on both directions of I-405 from Euclid Street to I-405 and a second GP lane NB from Brookhurst Street to the SR-22/7th Street interchange and SB from Seal Beach Boulevard to Brookhurst Street.

Proposed Engineering Features

Proposed engineering features in Alternative 2 are summarized as follows:

- Mainline features include:
  - Addition of two GP lanes in each direction.
  - New auxiliary lane on NB I-405 at the northerly approach of the Euclid Street off-ramp.
  - New auxiliary lane on NB I-405 between Euclid Street on-ramp and Brookhurst Street off-ramp.
  - New auxiliary lane on SB I-405 between Euclid Street on-ramp to Harbor Boulevard off-ramp.
  - Removal of the SB auxiliary lane between Beach Boulevard on-ramp and Magnolia Street off-ramp.
- Interchange features include:
  - Reconstruction of most existing interchange ramps from Euclid Street to Seal Beach Boulevard.
  - Additional through and turn lanes at ramp intersections with local streets.
  - Removal of HOV bypass lanes from on-ramps.
  - A new on-ramp from EB Ellis Avenue to SB I-405.
  - Reconfiguration of the Brookhurst Street interchange.
  - New braided ramps on both directions of I-405 between Warner Avenue and Magnolia Street.
  - Reconfiguration of the Beach Boulevard interchange.
- Structural features include:

- 6 new structures, 17 structure replacements, and 5 structure widenings/modifications.
- 1 box culvert replacement, 3 box culvert extensions, and 3 new box culverts.
- Construction of retaining walls where needed.
- Reconstruction of existing soundwalls that would be impacted by the project construction.

  Construction of new soundwalls.

1.5.4 Build Alternative 3: Add One General Purpose Lane Plus Express Lane in Each Direction

Alternative 3 is the only alternative being considered with a toll component that may utilize future potential public-private partnership and design-build authority to construct. Alternative 3 would add one GP lane in each direction along I-405 from Euclid Street to I-605 and would provide an Express Facility with 4 lanes (2 in each direction) for approximately 15 miles on I-405 from SR-73 to I-605. The Express Facility would include the existing HOV lanes (1 lane in each direction from SR-73 to SR-22 East and 2 lanes in each direction between SR-22 East and I-605), as well as a new lane in each direction from SR-73 to SR-22 East.

Proposed Engineering Features

Proposed engineering features in Alternative 3 are summarized as follows:

- Mainline features include:
  - Addition of one GP lane in each direction.
  - Provision of tolled express lanes combined with HOV usage.
  - New auxiliary lane on NB I-405 at the northerly approach of the Euclid Street off-ramp.
  - New auxiliary lane on NB I-405 between Seal Beach Boulevard on-ramp and SR-22/7th Street off-ramp.
  - New auxiliary lane on SB I-405 between Euclid Street on-ramp to Harbor Boulevard off-ramp.
  - Removal of the SB auxiliary lane between Beach Boulevard on-ramp and Magnolia Street off-ramp.
- Interchange features include:
  - Reconstruction of most existing interchange ramps from Fairview Road to Seal Beach

Boulevard.

- Additional through and turn lanes at ramp intersections with local streets.
- Removal of HOV bypass lanes from on-ramps.
- Partial reconstruction of the NB branch connector and the I-405/Fairview Road collector-distributor system.
- A new on-ramp from EB Ellis Avenue to SB I-405.
- Reconfiguration of the Brookhurst Street interchange.
- New braided ramps on both directions of I-405 between Warner Avenue and Magnolia Street.
- Reconfiguration of the Beach Boulevard interchange.

- Structural features include:
  - 7 new structures, 18 structure replacements, and 6 structure widenings/modifications.
  - A new direct connector in the median between I-405 and SR-73.
  - 1 box culvert replacement, 3 box culvert extensions, and 3 new box culverts.
  - Construction of retaining walls where needed.
  - Reconstruction of existing soundwalls that would be impacted by the project construction.

Construction of new soundwalls.

1.6 Floodplain Description

Floodplain and Floodway

Floodplains are areas of land inundated by the river during the 100-year flood. Floodplains are a natural feature of rivers that may also occur in portions of a watershed on land depressions or wetlands. They are the mostly flat land adjacent to the river and are formed due to the actions of a river. Designated Floodway refers to the channel of the stream and that portion of the adjoining floodplain reasonably required to provide for the passage of a design flood. Developments are prohibited in the floodway. Figure 2 depicts both floodplain and floodway areas.

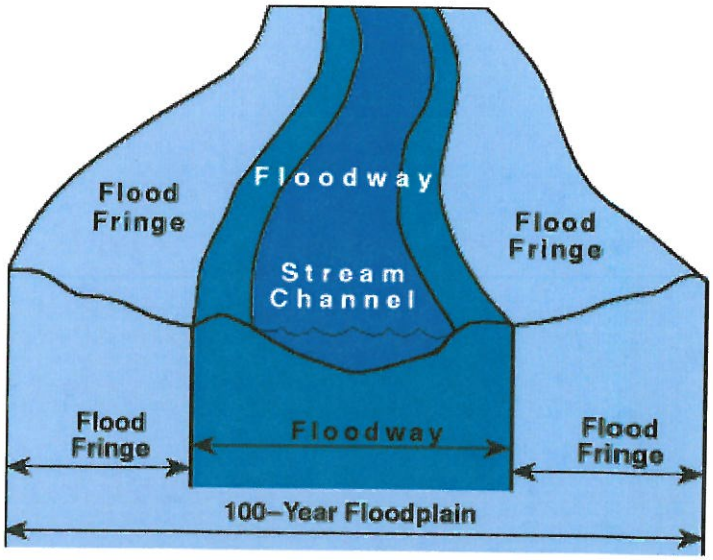

Figure 2 – Typical Floodplain and Floodway Location with Respect to the Main Stream

Rivers erode their own banks and redeposit the eroded material downstream. Material is added to the floodplain during floods, a process called overbank deposition. Rivers are constantly trying to reach an equilibrium state where there is balance of water and soil material. The material that underlies floodplains is a mixture of thick layers of sand and thin layers of mud. Undisturbed floodplains provide natural buffer by: (a) reducing the number and severity of floods, (b) minimizing non-point source water pollution, (c) filtering stormwater, (d) providing habitat for plants and animals, and (e) creating aesthetic beauty and outdoor recreation benefits.

When the flow in the river overtops its banks, the overflow spreads over the floodplain, which slows the flow of the water. Reduced water velocity can help prevent severe erosion and flooding downstream. In addition, during high water events, some of the water is absorbed by the floodplain, reducing the extent of the flooding. The absorbed water can then be returned to the stream during times of low water.

Floodplains are also home to many types of plants and animals and may also have forests and wetlands on or adjacent to them. These river edges provide habitat for insects, birds, reptiles, amphibians, and mammals. The vegetation also helps filter contaminants out of the water flowing into the river. In addition, vegetated floodplains provide shade for the adjacent rivers

and streams, increasing dissolved oxygen levels and consequently improving habitat for aquatic plants and animals.

In general, a floodplain cannot be altered in any way until it has been shown that alteration will pass the base flood without significant damage to either the floodplain or surrounding areas. No bridge abutment or embankment shall encroach on a regulatory floodway.

FEMA Designations

The Federal Emergency Management Agency (FEMA) designates Special Flood Hazard Areas (SFHAs) according to Zones. The Base Flood Elevation (BFE) is the water-surface elevation of the 1 percent annual chance of flood. The zones are described as:

Zone A – Corresponds to the 100-year floodplains that are determined in the Flood Insurance Study (FIS) by approximate methods. No BFEs or depths have been determined.

Zone AE – Corresponds to the areas of 100-year floodplains that are determined in the FIS by detailed methods. In most instances, BFEs have been derived from detailed hydraulic analyses and are shown within this zone.

Zone AH – Corresponds to the areas of 100-year shallow flooding with a constant water-surface elevation. Flood depths are 1 to 3 feet (usually areas of ponding); BFEs are derived from detailed hydraulic analyses and are shown at selected intervals within this zone.

Zone AO – Corresponds to the areas of 100-year shallow flooding. Flood depths are 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities are also determined.

Zone AR – Depicts areas protected from flood hazards by flood control structures such as levees that are being restored.

Zone X (dotted) – Other flood areas. Areas of 0.2 percent annual chance flood; areas of 1 percent annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1 percent annual chance flood.

Zone X – Areas determined to be outside the 0.2 percent annual chance floodplain.

Flood hazard areas within the study corridor are shown in Appendix A.

1.7 Federal Regulations

National Flood Insurance Program

FEMA developed the National Flood Insurance Program (NFIP) to assist thousands of communities across the country with floodplain management. NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in these participating communities. In addition to providing flood insurance and reducing flood damage through floodplain management regulations, the NFIP identifies and maps the nation's floodplains. Mapping flood hazards creates broad-based awareness of the flood hazards and provides the data needed for floodplain management programs and to actuarially rate new construction for flood insurance.

Executive Order (EO) 11988 directs all federal agencies to avoid to the extent practicable and feasible all short-term and long-term adverse impacts associated with floodplain modification and to avoid direct and indirect support of development within 100-year floodplains whenever there is a reasonable alternative available. Projects that encroach upon 100-year floodplains must be supported with additional specific information. The U.S. Department of Transportation Order 5650.2, Floodplain Management and Protection, prescribes "policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of adverse floodplain impacts in agency actions, planning programs, and budget requests." The order does not apply to areas with Zone C (areas of minimal flooding as shown on FEMA Flood Insurance Rate Maps [FIRM]).

U.S. Environmental Protection Agency

Under the Clean Water Act (CWA), the United States Environmental Protection Agency (EPA) was granted authority to implement pollution control programs, such as setting wastewater standards for industry. The CWA established the basic structure for regulating discharges of pollutants into the waters of the United States; in addition, it contains requirements to set water quality standards for all contaminants in surface waters. The CWA created the National Pollutant Discharge Elimination System (NPDES) permit program to regulate the discharge of

any pollutant from a point source into navigable waters by requiring those point sources to obtain a permit if their discharges go directly to surface waters.

Federal Emergency Management Agency

A Floodplain Evaluation is required as described under the NFIP (23 *Code of Federal Regulations* [CFR] 650, Subpart A Section 650). Section 650.111 of the regulations calls for location hydraulic studies to be performed with detailed engineering design drawings. Hydraulic modeling will be required, along with a hydraulic report summarizing the results (to be submitted for review by the local agencies listed in the FIRMs). A Conditional Letter of Map Revision (CLOMR) and a Letter of Map Revision (LOMR) may be required by FEMA for work within a floodway or for work resulting in significant impacts to the 100-year floodplain.

Clean Water Act (33 U.S.C. § 1251 *et seq.*)

The purpose of the CWA is restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters through prevention and elimination of pollution. The CWA applies to discharges of pollutants into waters of the United States. California's State Water Resources Control Board (SWRCB) is the State agency with primary responsibility for implementation of State and federally established regulations relating to hydrology and water quality issues. Typically, all regulatory requirements are implemented by the SWRCB through the nine different Regional Water Quality Control Boards (RWQCBs) established throughout the state. The CWA operates on the principle that any discharge of pollutants into the nation's waters is prohibited unless specifically authorized by a permit; permit review is the CWA's primary regulatory tool.

1.8 Required Permits and Approvals

The following permits may be required for water bodies impacted by the project.

Section 404 Permits

CWA Section 404 establishes a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands. Responsibility for administering and enforcing Section 404 is shared by the U.S. Army Corps of Engineers (USACE) and EPA. USACE administers the day-to-day program, including individual permit decisions and

jurisdictional determinations; develops policy and guidance; and enforces Section 404 provisions.

Section 401 Certification: Certification by the RWQCB to USACE and U.S. Fish and Wildlife Service

Certifies that Section 404 mitigation plan conforms to applicable Section 401 water quality standards from Santa Ana River RWQCB under Region #8 Federal CWA (Section 401).

NPDES Permit

Documents that completed project meets applicable water quality standards for drainage and runoff. An NPDES permit and Storm Water Pollution Prevention Plan (SWPPP)) are required from SWRCB under the Federal CWA (Section 402).

NPDES Permitting Requirements for Dewatering Discharges (Permit R8-2006-0004)

Discharges consisting solely of stormwater or minor discharges of non-stormwater containing sediment as the only pollutant are allowed to be discharged under the NPDES Statewide Permit. Examples of the latter are groundwater, water from cofferdams, and water diversions. The definition of a minor discharge in Region 8 is less than 0.25 million gallons per day (mgd) and 4 months' duration. A major discharge of non-stormwater, or stormwater or non-stormwater discharges containing pollutants other than sediment, require a site-specific dewatering permit from the RWQCB. (RWQCB, Region #8 Federal CWA [Section 402])

"Section 1602" Streambed Alteration Agreement; "Section 2080"

Agreement for threatened and endangered species from California Department of Fish and Game California Public Resources Code.